AMENDMENTS TO THE SPECIFICATION

In the following amendments to the Specification, brackets are used to indicate deletions and underlining is used to indicate additions.

Please amend the first full paragraph in Column 9 as shown in the following paragraph:

It will be appreciated from FIG. 7 that the diameter of the piston 56 is the same in the region of the seal 57a as it is in the region of the seal 57b. Thus, the cross-sectional area of the first working face of the piston 56 (the area acted upon by the adjacent volume of hydraulic brake fluid) is the same as the cross-sectional area of the second working face of the piston 56. Furthermore, the bore 55a is of constant diameter. These features [of the invention] are believed to simplify construction of the fluid separator unit 54a and reduce costs compared to a possible alternate construction having a stepped bore and stepped piston sliding therein. In the fluid separator unit 54a, pressurized fluid from the [backup source 6] normal source 4 actuates the piston 56 of the fluid separator unit 54a to pressurize the trapped hydraulic brake fluid between the isolation valve 22a and the wheel brake 11a to substantially the same pressure as the pressure at which the hydraulic brake fluid is supplied to the fluid separator unit 54a from the [backup source 6] normal source 4. Any differences due to the compression of the spring 58 of the fluid separator unit 54a and friction are generally negligible fractions of the pressures of the hydraulic brake fluid acting in the fluid separator unit 54a during braking.

Please amend the third full paragraph in Column 9 as shown in the following paragraph:

A spring 58 is provided which biases the fluid separator piston 56 toward the unactuated position of the piston 56, at the first end 55b of the bore 55a of the fluid separator unit 54a. The fluid separator piston 56 is constrained to remain in the bore 55a, and thus a complete loss of hydraulic brake fluid and pressure on one side of the fluid separator piston 56 of the fluid separator unit 54a will not result in loss of fluid or complete loss of pressure on the other side of the fluid separator piston 56. As pressurized hydraulic brake fluid flows into the fluid separator unit 54a from the proportional control valve 51a, the fluid separator piston 56 is moved to an actuated position, compressing the spring 58. The piston 56 acts on the hydraulic brake fluid in the second end 55c of the bore 55, thereby pressurizing the hydraulic brake fluid trapped between the energized isolation valve 22a and the vehicle brake 11a and causing the vehicle brake 11a to be applied. The normal source 4 also includes a fluid separator unit 54b connected (in an arrangement similar to that of the fluid separator unit 54a, the control valve 51 a and the brake 11a) between the control [valves] <u>valve</u> 51b and the vehicle brake 11b. The fluid separator unit 54b is similar in construction and operation to the fluid separator unit 54a.

Please amend the first full paragraph in Column 10 as shown in the following paragraph:

If [desire] <u>desired</u>, a groove 59f may be defined in the first piston face 59a of the piston 59. The groove 59f, like the boss 56f, assists in preventing hydraulic locking of the piston 59 at the unactuated position thereof. The groove 59f may be formed to extend only partially across the first face 59a of the piston 59, and still be effective in preventing hydraulic locking of the piston 59.

Please amend the third full paragraph in Column 10 as shown in the following paragraph:

Similarly, a second seal (not shown), which is also preferably an o-ring, is disposed in the second groove [56d] 59d formed in the piston [56] 59. The second seal slidingly seals between the piston 56 and the wall of the bore 55a, sealing against pressurized hydraulic brake fluid from the backup source 6 at the second end 55c of the bore 55. The second seal and the piston face [56b] 59b, including the recess [56e] 59e, cooperate to define a second working face of the piston [56] 59.

Please amend the second full paragraph in Column 19 as shown in the following paragraph:

Note that the dampening circuit 29 and the expansion volume unit 31 are preferably both included in the brake systems [of the present invention] described herein. However, it is contemplated that either or both of the dampening circuit 29 and the expansion volume unit 31 can be suitably omitted. The expansion volume unit 31 can also be designed to provide a progressively larger resistance to movement throughout the pedal stroke, thereby acting as a pedal simulator and eliminating the need for the pedal simulator 14 from the brake system.

Please amend the fourth full paragraph in Column 19 as shown in the following paragraph:

The vehicle brake system 200 may suitably be used on an automotive vehicle having four wheels and a brake for each wheel. [This invention provides] The vehicle brake system 200 is an electronically controlled brake system for the four wheels with manual backup braking to two of the vehicle brakes 11a and 11b. One of the differences between the brake systems 2 and 200, is that the balance valve 62 provides communication between the vehicle brakes 11a and 11b instead of communications between the outlets of the pressure control valves 51a and 51b. Thus, the balance valve 62 of the brake system 200 is hydraulically connected on the other side of the fluid separator units 54a and 54b from the balance valve 62 in the vehicle brake system 2. This arrangement presents different testing capabilities for the control module 10 by permitting direct cross connection of the wheel brake 11a and the pressure transducer 36a with the other front wheel brake 11b and the pressure transducer 36b, for example.

Please amend the first full paragraph in Column 21 as shown in the following paragraph:

The vehicle brake system 350 may suitably be used on an automotive vehicle having four wheels and a brake for each wheel. The vehicle brake system 350 is comprised of two separate brake systems, a front brake system shown generally at [351] 352 and a rear brake system shown generally at 354. The front brake system [351] 352 is comprised of two sub-systems: an electrically powered front brake system which includes a motor operated, electronically controlled normal source of pressurized brake fluid 4; and a manual supply of pressurized hydraulic brake fluid, embodied as a master cylinder 12. The rear brake system 354 is comprised of two electronically controlled power cylinders 210 and 212 for supplying pressurized hydraulic brake fluid to individual wheel brake units. The power cylinder 210 uses a

linear actuator 214 to drive a spring loaded piston 218 a controlled distance into a cylinder 226. The operation of the power cylinder 210 is controlled by the control module. The cylinder 226 is filled with hydraulic brake fluid, which may be pressurized and urged from the cylinder 226 of the power cylinder 210 into the brake unit 11d to generate a controlled amount of braking force with the vehicle brake 11d. The linear actuator 214 may be any suitable device for accurately controlling the position of the piston 218 with respect to the cylinder 226. A pressure transducer 222 provides a signal to the control module representative of the pressure developed by the power cylinder 210. Preferably, this pressure signal is used by the control module as a pressure feedback loop for controlling the operation of the power cylinder 210. The control module can modulate the pressure by positioning the linear actuator 214 of the power cylinder 210. The power cylinder brake unit 212 is preferably identical in configuration to the power cylinder brake unit 210. The power cylinder 212 uses a linear actuator 216 controlled by the control module to drive a piston 220 a controlled distance into a cylinder 228. The cylinder 228 is filled with hydraulic brake fluid, to selectively effect a controlled amount of braking force in the vehicle brake 11c. The linear actuator 216 may be any suitable device for accurately controlling the position of the piston 220 with respect to the cylinder 228. The pressure transducer 224 provides a pressure feedback signal to the control module representative of the pressure developed by the power cylinder 212. Preferably, this pressure signal is used by the control module as a pressure feedback loop for controlling the operation of the power cylinder 212. The control module can modulate the pressure by positioning the linear actuator 216 of the power cylinder 212.

Please amend the second full paragraph in Column 21 as shown in the following paragraph:

The front brake system [351] 352 of the present invention differs from the front brake units disclosed above, in that there is a single proportional control valve 51 that controls the hydraulic brake fluid pressure to both front vehicle brakes 11a and 11b. The hydraulic brake fluid is then selectively applied to the vehicle brakes 11a and 11b through electrically operated solenoid isolation valves 70a, 70b, 72a, and 72b, as will be described below. Additionally, a pressure isolation valve 348 is provided which acts to isolate only the accumulator 46 and not the pump 42. Suitable overpressure protection (not shown) should be provided for the accumulator 46. The pressure transducer 49 reflects the discharge pressure of the pump only when the discharge pressure is at least as high as the pressure in the accumulator 46 when the pressure isolation valve 348 is shut. However the pressure isolation valve 348 is energized open during normal braking, enabling the pressure transducer 49 to reflect the pressure of the hydraulic brake fluid being supplied to the proportional control valve 51.

Please amend the paragraph beginning in Column 23 and ending in Column 24 as shown in the following paragraph:

As in the previous embodiments of the brake system 2, 200 and 300, upon failure of the normal source of pressurized hydraulic brake fluid 4 to the vehicle brakes 11a and 11b, or upon failure of the control module, the backup source 6 of pressurized hydraulic brake fluid supplied by the master cylinder 12, will be an available source of pressurized hydraulic brake fluid to be applied to the brakes of the brake system 350, preferably to the front brakes 11a and 11b as illustrated in FIG. 10. The vehicle brakes 11a and 11b supplied by the master cylinder 12 can be designed to provide sufficient braking force to safely operate the vehicle with the pressure supplied from the master cylinder 12. Of course, although not illustrated in FIG. 10, it is contemplated that the master cylinder 12 can be operatively connected to selectively supply pressurized hydraulic brake fluid to the power cylinders 210 and 212, if desired. It is also contemplated that separate power supplies may by used to power the motors of the power cylinders 210 and 212 to provide an additional level of redundancy and safety to the brake system 350. Of course redundant, independently powered, and cross-checking control modules may be utilized to control the operation of the power cylinders 210 and 212, and of the proportional control [valves 51a and 51b] <u>valve 51</u>. It is also contemplated that all four of the vehicle brakes 11a, b, c, and d could be supplied from a respective power cylinder similar to the power cylinder 210. The backup source 6 could be connected to two or four of the vehicle brakes 11a, b, c, and d. A suitable fluid separator unit 54a is preferably provided between the power cylinder and the connection of the backup source 6 in communication with the vehicle brakes 11a, b, c, and d.